the self-sharpening cusp is limited to the outer margin and a pronounced central tab that possibly protects the cap during withdrawal. When the ribbon is curled the wings of opposing major laterals meet and prevent the denticle caps from abrading each other. The wings may also aid in the collection of food particles.

Each major lateral articulates with at least two inner small laterals. The outer small lateral helps to support the major uncinus which often has an L-shaped base. The inner marginal also supports the major uncinus and directs it inward during the curled position such that the distal blade interleaves two denticle caps. The major uncinus shields the unprotected back surface of a denticle cap from contact with the heavily mineralized portion of the next denticle cap in the column, but it also appears to serve as a sweeping tooth to collect food particles.

Near the anterior end the radula ribbon expands laterally and the denticle caps are directed inward. When *A. granulata* feeds 3-6 pairs of major laterals converge medially. The conspicuous grazing marks are roughly perpendicular to the longitudinal axis of the animal and they do not meet at the center. This indicates that this species probably rasps small particles from the substrate, but it is incapable of tearing away larger pieces.

RADULAR EVOLUTION IN THE PATELLOGASTROPODA. David R. Lindberg, Museum of Paleontology, University of California, Berkeley, California.

The Patellogastropoda (families Patellidae, Acmaeidae and Lepetidae) have a unique radula morphology among the Gastropoda. The bending plane over the odontophore is flat rather than curved as in other gastropod taxa and thus the radular teeth interact with the substrate like a rasp rather than being splayed against it. The lateral teeth are impregnated with ferrous oxides, and are positioned in either a stepped arrangement (the inner laterals are in a row) or inverted V arrangement (the lateral teeth diverge posteriorly). All three families have similar lateral tooth modifications for particular food types. Modifications for coralline algae, fleshy marine plants, and high intertidal flora are remarkably similar between families. Basal plate morphology becomes more complex in the derived taxa (*Patella* ◗ *Cellana* ◗ acmaeids). Evolutionary trends in the patellogastropod radula include: (1) the derivation of the inverted V configuration from the stepped configuration, (2) the reduction of tooth number, (3) the development of basal plates, and (4) the modification of lateral teeth for specific habitats. Simple changes in radular development appear to be responsible for the various radular configurations in the patellogastropods. The developmental events include the failure of odontoblasts to divide and the fusion of odontoblasts. Teratological radulae suggest that these events occur in three distinct tooth fields. The bending plane of the radula over the odontophore, the stepped radular configuration, and the presence of ferrous oxides in the lateral teeth are also present in polyplacophoran and monoplacophoran taxa.

AQUATIC MOLLUSCA OF THE ARKANSAS RIVER BASIN. Mark E. Gordon, Department of Zoology, University of Arkansas, Fayetteville.

The Arkansas River drainage with a 416,071 km^2 watershed is a major tributary system within the Interior Basin. Arising from the Continental Divide in Colorado, the Arkansas River flows 2333 km and descends 4366 m through several geomorphic provinces to its confluence with the Mississippi River. The aquatic malacofauna of the Arkansas basin has been assessed from critical review of published surveys, examination of museum vouchers, and personal collecting. One hundred three species have been identified: 37 gastropods, 50 unionaceans, and 16 sphaeriaceans. Six species have been introduced and another five unionaceans may exist in the faunally little-known portion within the Mississippi Alluvial Plain.

While the fauna is primarily composed of wide-spread Interior Basin species, high species richness has developed due to interactions between diverse physical conditions and regional endemism. Rocky Mountains habitats are dominated by rather ubiquitous, pioneering pulmonates and pisidiids. Similar faunal composition extends across the xeric High Plains. Influx of species, including unionaceans, occurs as the river flows into the more mesic Central Lowlands. Species richness is maximized near the junction of this province and the Interior Highlands. In this area, environmental parameters are most diverse and distributions of northern and southern Interior Basin species and Interior Highlands endemics are sympatric. As a result, several northern species reflect disjunct distributions relative to the rest of their range. While stream capture has been speculated as the explanation for such, these patterns are probably artifacts of Pleistocene biogeography. Post-Pleistocene climates restricted these northern species to upper portions of the drainage while southern species were able to invade Central Lowlands habitats via the conduit through the Interior Highlands represented by the low-gradient Arkansas River. Such southern recruitment may have been enhanced by the former channel of the extreme lower Arkansas which is presently occupied by Bayou Bartholemew.

DIURNAL AND SEASONAL VARIATION OF TERTIARY DIGESTIVE TUBULE MORPHOLOGY IN *CORBICULA FLUMINEA* (MÜLLER). Kashane Chalermwat, Department of Biological Sciences, University of Southern Mississippi, Hattiesburg.

Digestive tubule morphology during 24-hour periods in *Corbicula fluminea* show that animals maintained and sampled in the laboratory and those that were field sampled show different tubule appearance. "Starved" laboratory animals showed more random tubule morphology. "Fed" laboratory animals showed dominance of tubules in disintegrating and absorptive stages. Field sampled animals also show dominance of disintegrating and absorptive stages. Tubule morphology of bivalves in field samples and "fed" laboratory animals throughout 24-hour periods suggest continuous feeding. There is however, a notable difference in digestive tubule appearance between field and "fed" laboratory animals. Within digestive cell cytoplasm of field animals were found varying degrees of excretory vacuole formation. These